NOTE: This disposition is nonprecedential.

United States Court of Appeals for the Federal Circuit

BASF CORPORATION,
Appellant

v.

INGEVITY SOUTH CAROLINA, LLC,
Appellee

2022-1129

Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. PGR2020-00037.

Decided: June 22, 2023

PAUL ALESSIO MEZZINA, King & Spalding LLP, Washington, DC, argued for appellant. Also represented by JOSHUA NATHANIEL MITCHELL; BRIAN EUTERMOSER, MIKAELA STONE, Denver, CO.

BRIAN BUROKER, Gibson, Dunn & Crutcher LLP, Washington, DC, argued for appellee. Also represented by VLADIMIR J. SEMENDYAI; KATHERINE QUINN DOMINGUEZ, New York, NY; NATHANIEL RYAN SCHARN, BRIAN YANG, Irvine, CA.

Before LOURIE, DYK, and STOLL, *Circuit Judges*.

STOLL, *Circuit Judge*.

BASF Corporation appeals the Patent Trial and Appeal Board's final written decision determining that BASF failed to show that certain claims of U.S. Patent No. 10,323,553 were unpatentable as indefinite or obvious. We affirm in part, vacate in part, and remand. In particular, we hold that, based on its statement that it need not consider BASF's evidence, the Board failed to properly consider the record evidence and adequately explain its rationale for indefiniteness. We therefore vacate the Board's indefiniteness determination and remand for further proceedings. We otherwise find no reversible error in the Board's obviousness determination and affirm the Board's decision in that regard.

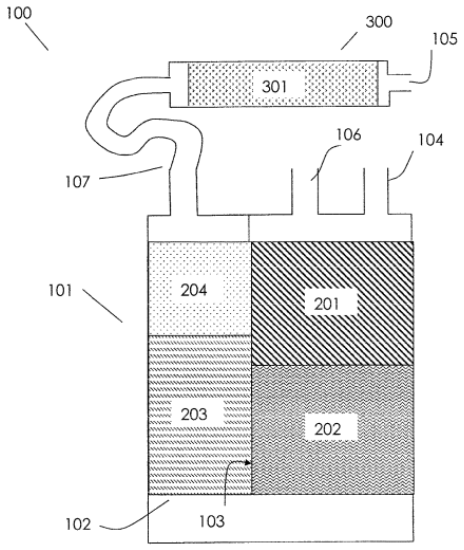
BACKGROUND

Ingevity South Carolina, LLC owns the '553 patent, which relates to systems for reducing fuel vapor emissions in low purge conditions, e.g., in hybrid vehicles. '553 patent col. 1 ll. 22–25, col. 2 ll. 55–65.

Gasoline-powered motor vehicles are equipped with a vented fuel tank to allow for fuel vapors to expand and contract. As a result, fuel vapors escape to the atmosphere through the fuel tank's vent and pollute the air. These fuel vapor emissions are known as diurnal breathing losses (DBLs). To reduce fuel vapor emissions, engineers developed adsorption canister systems. First, honeycomb-shaped volumes made of adsorbent material, such as activated carbon, collect fuel vapors while allowing other components to pass through. But adsorbent volumes can only adsorb so much vapor; so, once the adsorbent volumes reach their limit, non-adsorbed fuel vapors escape into the atmosphere. To address this issue, the vehicle's engine—

while on—draws air back through the canister, and the adsorbed fuel vapors are drawn back into the engine (desorption) and burned (purge). This canister system, however, was not as effective for hybrid vehicles because the engines in hybrid vehicles do not run as frequently as traditional gasoline-powered vehicles and thus spend less time in this second, desorption phase. Hence, hybrid vehicles operate in "low purge" conditions.

The '553 patent purports to reduce fuel vapor emissions in hybrid vehicles using a canister system with an initial adsorbent volume and at least one subsequent adsorbent volume with lower adsorptive properties (i.e., lesser adsorptive capacity) than the initial adsorption volume. '553 patent Abstract. For example, as depicted below in Figure 4 of the patent, fuel-side adsorbent volume 201 would have a higher adsorption capacity than at least one of the subsequent adsorbent volumes 202, 203, 204, or 301:



Id. at Fig. 4, col. 4 l. 61–col. 5 l. 3.

Claim 1 is illustrative and describes the characteristics of the adsorbent volumes:

> 1. An evaporative emission control canister system, including one or more canisters and comprising:
>
> > a fuel-side adsorbent volume having an effective incremental adsorption capacity at 25° C. of greater than 35 grams n-butane/L between vapor concentration of 5 vol % and 50 vol % n-butane; and
> >
> > at least one subsequent adsorbent volume having an effective incremental adsorption capacity at 25° C. of less than 35 grams n-butane/L between vapor concentration of 5 vol % and 50 vol % n-butane, an effective butane working capacity (BWC) of less than 3 g/dL, and a g-total BWC of ≤6 grams,
> >
> > wherein the fuel-side adsorbent volume having an effective incremental adsorption capacity at 25° C. of greater than 35 grams n-butane/L between vapor concentration of 5 vol % and 50 vol % n-butane, and the at least one subsequent adsorbent volume are located within a single canister, or in separate canisters that are connected to permit sequential contact by fuel vapor, and wherein the canister system has a two-day diurnal breathing loss (DBL) of no more than 20 mg at no more than 100 BV of purge applied after a 40 g/hr butane loading step.

Id. at col. 23 ll. 18–40.

BASF, a competitor in the design and manufacture of carbon honeycombs, petitioned for post-grant review of claims 1–10, 14–28, 32–38, 51, 52, 55–57, 59, 64–72, and 76–82 of the '553 patent. BASF asserted that the challenged claims are indefinite and would have been obvious

over Hiltzik[1] in view of Clontz WIPO[2] and Clontz SAE.[3] Hiltzik is Ingevity's own patent, shares two common inventors with the '553 patent, and discloses similar subject matter as the limitations of claim 1, but not the low-purge performance limitation: "wherein the canister system has a two-day diurnal breathing loss (DBL) of no more than 20 mg at no more than 100 BV of purge applied after a 40 g/hr butane loading step." The Board held that BASF had not shown the challenged claims were unpatentable under either ground. *BASF Corp. v. Ingevity S.C., LLC*, 2021 Pat. App. LEXIS 5450, at *47–48 (P.T.A.B. Sept. 9, 2021) (*Decision*).

BASF appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

BASF challenges the Board's indefiniteness and obviousness determinations. Ingevity challenges BASF's standing for this appeal.[4] We address the threshold issue of standing before addressing the Board's indefiniteness and obviousness determinations.

I

We begin with standing. Ingevity argues that BASF lacks standing because BASF failed to provide evidence of

---

1 U.S. Patent No. RE38,844.

2 WO 2009/061533 A1.

3 Clontz, R., *et al.*, *Effects of Low-Purge Vehicle Applications and Ethanol-Containing Fuels on Evaporative Emissions Canister Performance*, SOC'Y AUTO. ENG'RS JAPAN (2007).

4 Ingevity filed a motion to terminate BASF's appeal, alleging that BASF lacked Article III standing. ECF No. 9. We denied the motion and directed the parties to address standing in their merits briefing. ECF No. 20.

a likely infringing act in the United States or concrete business plans for a BASF product that could lead to such an act. Appellee's Br. 58. Specifically, Ingevity contends that BASF does not explain what testing, manufacturing, or selling of its products has occurred in the United States; BASF has not explicitly named interested customers; and BASF's business plans are speculative in light of the lengthy validation process required for products on vehicle platforms in the United States. *Id.* at 58–62.

BASF contends that it has standing because Ingevity previously sued it for infringement of Hiltzik—directed to an invention similar to the '553 patent—based on BASF's use and testing of EvapTrap XC, its previously produced activated carbon product. Appellant's Br 62–65; *see* Complaint, *Ingevity Corp. v. BASF Corp.*, No. 1:18CV01391, 2018 WL 11360396 (D. Del. Sept. 6, 2018). Mr. Joseph Moonjely, BASF's in-house counsel, explained that BASF's product was developed to be used in U.S. vehicles and to meet U.S. emissions standards, and BASF can currently manufacture and provide its product to customers. Appellant's Br. 62–65 (citing Moonjely Decl. ¶¶ 9, 29–30); Reply Br. 34–35. Mr. Moonjely also stated that interested customers have inquired about the product's pricing and inventory for use on vehicle platforms in the United States. Moonjely Decl. ¶ 29.

BASF, as the party invoking federal jurisdiction, bears the burden of establishing standing. *Spokeo, Inc. v. Robins*, 578 U.S. 330, 338 (2016), *as revised* (May 24, 2016). To establish Article III standing, BASF must show: (1) it "suffered an injury in fact, (2) that is fairly traceable to the challenged conduct of the defendant, and (3) that is likely to be redressed by a favorable judicial decision." *Id.* To demonstrate the requisite injury in an appeal from a final written decision in a post grant review, "we have concluded that it is generally sufficient for the appellant to show that it has engaged in, is engaging in, or will likely engage in 'activity that would give rise to a possible infringement

suit.'" *Grit Energy Sols., LLC v. Oren Techs., LLC*, 957 F.3d 1309, 1319 (Fed. Cir. 2020) (quoting *Consumer Watchdog v. Wis. Alumni Rsch. Found.*, 753 F.3d 1258, 1262 (Fed. Cir. 2014)). BASF "need not face 'a specific threat of infringement litigation by the patentee' to establish jurisdiction," but rather need only "generally show a controversy 'of sufficient immediacy and reality' to warrant the requested judicial relief." *E.I. DuPont de Nemours & Co. v. Synvina C.V.*, 904 F.3d 996, 1004 (Fed. Cir. 2018) (quoting *ABB Inc. v. Cooper Indus., LLC*, 635 F.3d 1345, 1348 (Fed. Cir. 2011)).

We are satisfied that BASF has met its burden of establishing standing. "[F]or purposes of assessing standing," we accept Mr. Moonjely's declaration "as true . . . material representations of fact." *Amerigen Pharms. Ltd. v. UCB Pharma GmBH*, 913 F.3d 1076, 1083 (Fed. Cir. 2019). We have previously found a substantial risk of future infringement where the appellant "operates a plant [that is] capable of infringing the . . . patent" at issue. *DuPont*, 904 F.3d at 1004–05. We have also held that prior litigation involving, for example, the patent-in-suit or related patents "presents an even stronger basis for standing." *Google LLC v. Conversant Wireless Licensing S.A.R.L.*, 753 F. App'x 890, 894 (Fed. Cir. 2018) (non-precedential) (finding appellants' risk of infringement concrete and substantial where appellant was previously accused of patent infringement by the appellee); *see also Adidas AG v. Nike, Inc.*, 963 F.3d 1355, 1357 (Fed. Cir. 2020) (finding the appellant had standing where the appellee asserted the patent-at-issue against a third-party product similar to that of the appellant's). Here, BASF has demonstrated that it plans to sell its product in the United States and was previously sued by Ingevity. Because BASF "has concrete plans for future activity that create[] a substantial risk of future infringement or likely cause the patentee to assert a claim of infringement," *JTEKT Corp. v. GKN Auto. Ltd.*, 898 F.3d 1217, 1221 (Fed. Cir. 2018), we conclude that

BASF has satisfied the requirements for Article III standing.

II

We thus proceed to the merits of BASF's appeal. We review the Board's ultimate conclusions of indefiniteness and obviousness de novo and its underlying fact determinations for substantial evidence. *Guangdong Alison Hi-Tech Co. v. Int'l Trade Comm'n*, 936 F.3d 1353, 1359 (Fed. Cir. 2019); *TQ Delta, LLC v. CISCO Sys., Inc.*, 942 F.3d 1352, 1357 (Fed. Cir. 2019). The substantial evidence standard asks whether, after examining the record evidence, "a reasonable fact finder could arrive at the agency's decision." *TQ Delta*, 942 F.3d at 1358.

BASF challenges the Board's findings that (1) two methods of measuring adsorption capacity—the gravimetric and volumetric measurement methods—are comparable; and (2) a skilled artisan would not have been motivated to dilute Hiltzik's honeycomb to achieve lower emissions in view of Clontz SAE. We address each issue in turn.

A

BASF challenges the Board's rejection of its indefiniteness ground as being arbitrary and capricious and not supported by substantial evidence. Appellant's Br. 30–43. The challenged claims recite "an effective incremental adsorption capacity." For example, Claim 1 requires "a fuel-side adsorbent volume having an *effective incremental adsorption capacity* [(IAC)] . . . of greater than 35 grams n-butane/L" and "at least one subsequent adsorbent volume having an *effective incremental adsorption capacity* . . . of less than 35 grams n-butane/L." '553 patent col. 9 ll. 6–25, col. 23 ll. 20–26 (emphases added). The '553 patent discloses two different methods of measuring effective IAC: a gravimetric method and a volumetric method. *Id.* at col. 13 l. 60–col. 14 l. 54.

BASF argued before the Board that the challenged claims are indefinite because the patent specification fails to teach with reasonable certainty how the effective IAC should be measured, and the specification articulates two measurement methods that give varying results. Appellant's Br. 30–31 ("[W]hen 'different approaches to measurement are involved,' the patent 'must disclose a single known approach or establish that, where multiple known approaches exist, a [skilled artisan] would know which approach to select.'" (quoting *Dow Chem. Co. v. Nova Chems. Corp. (Can.)*, 803 F.3d 620, 630 (Fed. Cir. 2015)). In support, BASF offered a memorandum from its expert Dr. Guo, as well as third-party testing, to show alleged significant differences between results determined using the gravimetric and volumetric methods. *See Decision*, 2021 Pat. App. LEXIS 5450, at *17; J.A. 2055; J.A. 3092.

In response, Ingevity offered contrary evidence, such as peer-reviewed articles and expert testimony, to show that the two measurement methods "were known to measure equivalent adsorption capacities and were viewed as compatible with each other." *Decision*, 2021 Pat. App. LEXIS 5450, at *17. This evidence showed, Ingevity argued, that the large differences found in BASF's testing resulted from "instrument inaccuracies and experimental error." *Id.*

The Board ultimately found that BASF had not established indefiniteness of the claims by a preponderance of the evidence. *Id.* at *18. On appeal, BASF argues that the Board credited Ingevity's evidence and failed to consider its contrary evidence of indefiniteness, including its third-party testing evidence. Appellant's Br. 37–40. The Board's opinion states in relevant part:

> We find that the evidence submitted by Patent Owner as to the gravimetric and volumetric measurement techniques demonstrates that they were well established in the art as comparable methods for measuring adsorption capacity, and

> accordingly, not a basis for determining claim indefiniteness.
>
> Because this determination is dispositive as to Petitioner's indefiniteness challenge, *we need not address Petitioner's allegations as to the measurement differences* . . . .

Decision, 2021 Pat. App. LEXIS 5450, at *19 (emphasis added; citations omitted).

The Board's statement suggests that, because it found Ingevity's evidence on indefiniteness convincing, the Board did not consider BASF's evidence on the issue.

Substantial evidence review "asks whether a reasonable fact finder could have arrived at the agency's decision, and involves examination of the record as a whole, taking into account evidence that both justifies and detracts from an agency's decision." *TQ Delta*, 942 F.3d at 1358 (quotations omitted). Although our review under the Administrative Procedure Act (APA) is deferential, *id.*, the Board must "explain[] its decisions with sufficient precision, including the underlying factfindings and [its] rationale," *Packard Press, Inc. v. Hewlett-Packard Co.*, 227 F.3d 1352, 1357 (Fed. Cir. 2000). Indeed, "the Board may not short-cut its consideration of the factual record before it." *Princeton Vanguard, LLC v. Frito-Lay N. Am., Inc.*, 786 F.3d 960, 970 (Fed. Cir. 2015); *see id.* ("Though the Board is not required to discuss every piece of evidence, it cannot . . . disregard [the appellant's] evidence without explanation.").

At oral argument, Ingevity asserted that the Board did weigh BASF's evidence against Ingevity's. For example, Ingevity suggested the Board noted that Dr. Zielinski, who oversaw BASF's third-party testing, also wrote one of the peer-reviewed publications submitted by Ingevity. *See* Oral Arg. at 16:12–17:13, https://oralarguments.cafc.uscourts.gov/default.aspx?fl=22-1129_05032023.mp3. In Ingevity's view, the Board made a credibility

finding and determined that Dr. Zielinski's peer-reviewed article was more reliable than the third-party testing, in light of the other evidence in the record. *Id.* In other words, Ingevity argued that the Board considered the evidence submitted by BASF and Ingevity, and ultimately determined that Ingevity's evidence established that the volumetric and gravimetric techniques are comparable methods in the art. *Id.* at 16:12–17:43; *see id.* at 18:12–18:26 ("All you have to do is find a path to their outcome, which is clear—[the Board] found the peer-reviewed articles . . . and unbiased materials to be more compelling."). But the Board did not explain whether it found Ingevity's evidence more credible; nor did it explain whether it found BASF's testing unreliable and therefore did not give that evidence any weight. *See id.* at 17:43–18:16. While we may well have affirmed the Board had it articulated any of these purported reasons for its conclusion, we cannot meaningfully review the Board's opinion to determine whether its underlying factual finding is supported by substantial evidence because we cannot discern the basis for the Board's finding—other than its very clear statement that it need not consider BASF's evidence. Such a statement, without further elaboration, runs afoul of the APA's requirement to consider all the evidence and thus the Board's analysis is improper.

We therefore vacate the Board's decision regarding BASF's indefiniteness challenge and remand for the Board to consider all the proffered evidence of record and make the relevant factual findings and legal conclusion regarding indefiniteness.

B

We now turn to BASF's challenge to the Board's finding on motivation to combine the asserted prior art. Appellant's Br. 43–61. Claim 1 is illustrative and requires "at least one subsequent adsorbent volume having . . . an effective butane working capacity (BWC) of less than 3 g/dL,

and a g-total BWC of ≤6 grams" and "the canister system ha[ving] a two-day diurnal breathing loss (DBL) of no more than 20 mg at no more than 100 BV of purge applied after a 40 g/hr butane loading step." *See* '553 patent col. 23 ll. 24–40. In its petition, BASF asserted that Hiltzik, Clontz WIPO, and Clontz SAE taught this limitation—specifically, that a skilled artisan would have been motivated to dilute the honeycomb in Hiltzik's Example 2 in view of the teachings of the two Clontz references that such a dilution would be preferable in a low purge environment. J.A. 214–16; *see also Decision*, 2021 Pat. App. LEXIS 5450, at *28–29.

The Board found that BASF had not established by a preponderance of the evidence that a skilled artisan would have been motivated to dilute Hiltzik's honeycomb adsorbent "to meet emissions standards at low-purge conditions in view of Clontz SAE and Clontz WIPO."[5] *Id.* at *32–36. The Board was persuaded by Ingevity's argument that Clontz SAE expressly teaches that "higher working capacity honeycombs 'facilitate achievement of target emissions

---

[5] Although both parties assert that the Board found that Clontz SAE teaches away from the claimed invention, we understand the Board's opinion as holding that a person of ordinary skill in the art would not have been motivated to modify Hiltzik in view of the Clontz references because Clontz SAE teaches an alternative solution to the same low-purge problem present in the '553 patent. *See, e.g.*, Appellant's Br. 27–28; Appellee's Br. 2. Indeed, the Board's decision does not use the legal term "teaching away," nor does it analyze the stringent criteria required for establishing teaching away. *See Rembrandt Wireless Techs., LP v. Samsung Elecs. Co.*, 853 F.3d 1370, 1379 (Fed. Cir. 2017) ("Whether a reference teaches away is doctrinally distinct from whether there is no motivation to combine prior art references.").

levels under the reduced purge conditions.'" *Id.* at *32–33 (quoting J.A. 2272).

On appeal, BASF challenges the Board's finding that a skilled artisan would not have been motivated to combine Hiltzik with the Clontz references. Specifically, BASF argues that contrary to the Board's finding, Clontz WIPO suggests diluting Hiltzik's honeycomb with its teaching using adsorbents with flatter isotherms, including voids in the adsorbents, and reducing the honeycomb's resistance. Appellant's Br. 43–60; *see also id.* at 44–51.

We hold that the Board's finding—that a skilled artisan would not have been motivated to make the proposed combination of Hiltzik and the Clontz references—is supported by substantial evidence. Clontz SAE discloses using "higher capacity honeycombs" than the honeycombs in Hiltzik to achieve "target emissions levels under the reduced purge conditions." J.A. 2272. Clontz SAE teaches that canister emissions were generally better in large volumes, as shown by a larger honeycomb exhibiting lower emissions levels than the smaller honeycomb at purge volumes less than 200 bed volumes. J.A. 2268–69. A reasonable factfinder could therefore find that Clontz SAE would have motivated a skilled artisan to use a higher BWC in subsequent adsorbent volumes.

While BASF introduced evidence arguably demonstrating a motivation to combine—e.g., BASF's expert opining that the skilled artisan would have been motivated because both Hiltzik and Clontz WIPO teach diluting the honeycomb (either by flattening its isotherm or reducing its resistance) to achieve better emissions and reduce its IAC and BWC—the Board considered this evidence. Instead, the Board found that Clontz SAE never mentions dilution as a means to address the problem with low-purge conditions. *See Decision*, 2021 Pat. App. LEXIS 5450, at *33–34. Given the varied record evidence—with some supporting BASF's view and some supporting Ingevity's

view—the Board was entitled to reasonably reach its factual finding. "This court does not reweigh evidence on appeal, but rather determines whether substantial evidence supports the Board's fact findings." *In re NTP, Inc.*, 654 F.3d 1279, 1292 (Fed. Cir. 2011). Therefore, we conclude that substantial evidence supports a finding of no motivation to combine.

CONCLUSION

We have considered BASF's remaining arguments and find them unpersuasive. For the foregoing reasons, BASF has standing to appeal the Board's final written decision. Because the Board did not explain why it disregarded BASF's proffered evidence regarding the measurement techniques, we vacate the Board's indefiniteness determination and remand for further proceedings consistent with this opinion. Because substantial evidence supports the Board's finding no motivation to combine, we affirm the Board's obviousness determination.

AFFIRMED-IN-PART, VACATED-IN-PART, AND REMANDED

COSTS

No costs.